

Remarks

The above Amendments and these Remarks are in reply to the Office action mailed June 4, 2004. Claims 1, 36, 45, and 49 have been amended. The amendments to claims 1, 36, 45, and 49 are not made to substantively change the scope of the claims but to more particularly point out the distinctions from the prior art. Applicants assert that claims 1-5, 7-22, 36-40, and 45-49 are patentable over all cited art and respectfully request entry of the present remarks and amendments.

I. Interview

An interview was conducted between Examiner Teresinski and the undersigned on November 3, 2004.

Claims 1 and 45 with respect to U.S. Patent No. 6,336,099 ("*Reddi*") were discussed. The amendment of claims 1, 36, 45, and 49 as substantially set forth herein was discussed.

Applicants' representative argued that *Reddi* fails to disclose "providing a plurality of sense pulses from an output of a sense pulse generator having a first polarity to a sense capacitor during a first sampling period to obtain a first output of the sense transducer," and "providing a plurality of sense pulses from said output of said sense pulse generator having a second polarity to said sense capacitor during a second sampling period to obtain a second output of the sense transducer." Applicants' representative argued that *Reddi* discloses two distinct outputs, each with different polarities, being applied to two different capacitors. The substance of that argument can be found in the arguments below.

The Examiner preliminarily agreed with Applicants' representative that *Reddi* failed to disclose the above-identified limitations.

The Examiner agreed that if Applicants filed an after-final response incorporating the amendments discussed, he would consider the amendments with respect to *Reddi* and perform another search. The Examiner further agreed that if no more pertinent art was found, he would allow the claims as amended. The Examiner also agreed that if he did find art, he would withdraw the finality of the rejection in the Office Action dated June 4, 2004, and issue a new non-final Office Action based on the newly found art.

II. Rejections under 35 U.S.C. § 102(e)

Claim 45 was rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,366,099 (“*Reddi*”). Because *Reddi* does not disclose each limitation of claim 45, Applicants assert that claim 45 is patentable over the cited art.

Amended claim 45 recites:

providing a plurality of sense pulses from an output of a sense pulse generator having a first polarity to a sense capacitor during a first sampling period to obtain a first output of the sense transducer; and

providing a plurality of sense pulses from said output of said sense pulse generator having a second polarity to said sense capacitor during a second sampling period to obtain a second output of the sense transducer.

Thus, as recited in amended claim 45, a plurality of sense pulses having a first polarity are provided to a sense capacitor during a first sampling period and a plurality of sense pulses having a second polarity are provided to the same sense capacitor during a second sampling period. *Reddi* does not disclose providing sense pulses having different polarities to the same capacitor during different time periods. In *Reddi*, the same polarity is applied to a capacitor during all sampling or time periods.

As cited, *Reddi* discloses a “balanced pulse generator 12 [that] provides complementary, low duty cycle square wave excitation pulses to drive the sensor.” *Reddi*, col. 4, ll. 45-49. *Reddi* further discloses that a “balanced pulse generator provides pulses which are substantially equal in magnitude although opposite in polarity.” *Id.* *Reddi* does not disclose a single output having opposite polarity over two sampling periods as recited in claim 45, but rather, two different outputs that have opposite polarities. Each of the individual outputs provides the same polarity over each sampling period. Moreover, the individual outputs are provided to individual capacitors such that each individual capacitor is provided the same polarity during each period. *Reddi* does not disclose providing different polarity sense pulses from the same output to the same capacitor during different sampling periods as recited in claim 45.

Reddi explains that the “output signals of the balanced pulse generator 12 are typically a positive pulse train as shown by inset 13 on conductor 14 and a negative pulse train as shown by inset 15 on conductor 16.” *Id.* at col. 4, l. 66 – col. 5, l. 2. Looking at Figure 1a, it is clear that inset

13 represents a first signal on a first output of the pulse generator and inset 15 represents a second signal on a second output of the pulse generator. Signal 13 is a positive pulse train and it is provided on a first output to capacitor C1 (via diode D1). Signal 15 is a negative pulse train and it is provided on a second output to capacitor C2 (via diode D2). Thus, each signal is a single polarity signal (positive or negative) and each signal is provided to a different capacitor via a different output of the pulse generator. Accordingly, a first capacitor is provided a first polarity pulse and a second capacitor is provided a second polarity pulse. Neither capacitor is provided different polarity pulses. They either receive the positive signal or the negative signal, but not both. Accordingly, *Reddi* does not disclose providing sense pulses on an output of a sense pulse generator “having a first polarity to a sense capacitor during a first sampling period,” and “having a second polarity to said sense capacitor during a second sampling period.” *Reddi* provides the same polarity to a capacitor during all periods because *Reddi* either provides a positive pulse train or a negative pulse train, but not both, to individual capacitors.

Because *Reddi* fails to disclose the above-cited limitations of claim 45, Applicants assert that claim 45 is patentable over the cited art.

III. Rejection of Claims 1-5, 14, 19-22, 36-39, and 46-47 under 35 U.S.C. § 103(a)

Claims 1-5, 14, 19-22, 36-39, and 46-47 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Reddi* in view of U.S. Patent No. 5,612,494 (“*Shibano*”). Because *Reddi* and *Shibano*, either alone or in combination, fail to teach or suggest each of the limitations of claims 1-5, 14, 19-22, 36-39 and 46-47, Applicants assert that these claims are patentable over the cited art.

Claims 1-5, 14, and 19-22

Amended claim 1 recites:

a sense pulse generator having an output coupled to said sense capacitor, said output providing a first polarity sense pulse to said sense capacitor during a first sampling period and a second polarity sense pulse to said sense capacitor during a second sampling period.

Similarly to claim 45 discussed above, claim 1 recites a sense pulse generator having an output that provides a plurality of sense pulses having a first polarity to a sense capacitor during a

first sampling period and provides a plurality of sense pulses having a second polarity to the same sense capacitor during a second sampling period. *Reddi* does not disclose or contain any suggestion for providing different polarity sense pulses from a single output of a sense pulse generator to a single capacitor as recited in claim 1. *Reddi* discloses a pulse generator with two outputs. See Figure 1a, col. 4, l. 66 – col. 5, l. 29. The first output includes a positive pulse train and it is provided to a first capacitor. The second output includes a negative pulse train and it is provided to a second capacitor. There is nothing within *Reddi* to suggest altering the disclosed structure to provide different polarity signals to the same sense capacitor as recited in claim 1. Moreover, *Reddi* contains no discussion of the benefits or effects of such a process as claimed by Applicants.

Recognizing that *Reddi* fails to disclose a storage device coupled to the detector, the Examiner cited *Shibano* for the disclosure of a storage device. Even if *Shibano* is combined with *Reddi*, the resulting combination fails to teach or suggest “a sense pulse generator having an output coupled to said sense capacitor, said output providing a first polarity sense pulse to said sense capacitor during a first sampling period and a second polarity sense pulse to said sense capacitor during a second sampling period.” As recognized on page 2 of the Office Action dated October 20, 2003 and by Applicants in Response B dated February 20, 2004, *Shibano* fails to disclose an output with different polarity sense pulse signals. Accordingly, even if *Reddi* and *Shibano* are combined as suggested by the Examiner, the resulting combination fails to teach or suggest each of the limitations of claim 1.

Applicants assert that claim 1 is patentable over *Reddi* in view of *Shibano* because the combination of references fails to teach or suggest each of the limitations of claim 1. Claims 2-5, 14, and 19-22 each ultimately depend from claim 1 and should be patentable for at least the same reasons.

Claims 36-39

Amended claim 36 recites:

a sense pulse generator having an output coupled to said sense capacitor, said sense pulse generator comprising control circuitry, said control circuitry causing said sense pulse generator to provide sense pulse signals to said sense capacitor that have a sense pulse polarity that inverts over two sampling periods.

Similarly to claims 1 and 45, claim 36 recites a sense pulse generator having an output that provides sense pulse signals of inverted polarity to the same sense capacitor during different sampling periods. As set forth with respect to claims 1 and 45, *Reddi* and *Shibano*, either alone or in combination, fail to teach or suggest a limitation. *Shibano* fails to disclose an output with different polarities and *Reddi* fails to disclose an output with different polarity sense pulses provided to the same sense capacitor during different sampling periods. Accordingly, for these and the reasons set forth above, Applicants assert that even if combined as suggested by the Examiner, *Reddi* and *Shibano* fail to teach or suggest each of the limitations of claim 36.

Applicants assert that claim 36 is patentable over *Reddi* in view of *Shibano* because the combination of references fails to teach or suggest each of the limitations of claim 36. Claims 37-39 each ultimately depend from claim 36 and should be patentable for at least the same reasons.

Claims 46-47

Claims 46-47 each ultimately depend from claim 45. As set forth with respect to claims 1 and 45, *Reddi* and *Shibano*, either alone or in combination, fail to teach or suggest each of the limitations of claim 45. Accordingly, Applicants assert that claim 45 is not obvious in view of the combination of *Reddi* and *Shibano* because the combination fails to teach or suggest each of the limitations of claim 45. Claims 46-47 each ultimately depend from claim 45, and therefore, should be patentable for at least the same reasons as claim 45.

IV. Rejection of Claims 7, 8, 10-13, 17, 18, 40, 48, and 49 under 35 U.S.C. § 103(a)

Claims 7, 8, 10-13, 17, 18, 40, 48, and 49 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Reddi* and *Shibano* in view of U.S. Patent No. 5,606,515 (“*Mockapetris*”). Because *Reddi*, *Shibano*, and *Mockapetris*, either alone or in combination, fail to teach or suggest each of the limitations of claims 7, 8, 10-13, 17, 18, 40, 48, and 49, Applicants assert that these claims are patentable over the cited art.

Claims 7, 8, 10-13, 17, 18, 40, and 48

Claims 7, 8, 10-13, 17, and 18 each ultimately depend from claim 1, claim 40 depends from claim 36, and claim 48 ultimately depends from claim 45. As set forth above, the combination of

Reddi and *Shibano* fails to teach or suggest each of the limitations of claims 1, 36, and 45. Accordingly, even if *Mockapetris* is combined with *Reddi* and *Shibano* for the disclosure of a demodulation circuit and analog to digital converter, the resulting combination suggested by the Examiner fails to teach or suggest every limitation of claims 7, 8, 10-13, 17, 18, 40, and 48. Thus, Applicants assert that claims 7, 8, 10-13, 17, 18, 40, and 48 are patentable over the cited art under 35 U.S.C. § 103(a).

Claim 49

It is respectfully submitted that claim 49 is not obvious over *Reddi* and *Shibano* in view of *Mockapetris*. The Examiner recognizes that “*Reddi* as modified does not disclose a demodulation circuit coupled to the storage device or an analog to digital converter coupled to the storage device and the demodulator” and thus, asserts that *Mockapetris* discloses circuitry “including an analog to digital converted coupled to storage means and coupled to a demodulator with an input and output.” *Office Action*, p. 4. It is respectfully submitted, however, that *Reddi*, *Shibano*, and *Mockapetris*, alone or in combination, fail to teach or suggest:

a sense pulse generator having an output coupled to said sense capacitor, the output providing a first magnitude sense pulse of a first polarity to said sense capacitor during a first sampling period and a second magnitude sense pulse of a second polarity to said sense capacitor during a second sampling period.

As set forth above, *Reddi* discloses two outputs with sense pulses of different polarities applied to separate capacitors while *Shibano* discloses an output with the same polarity over sampling periods. Hence, even if *Mockapetris* is combined with *Reddi* and *Shibano* in the manner suggested by the Examiner, the resulting combination fails to teach or suggest every limitation of claim 49. Accordingly, it is respectfully submitted that Claim 49 is patentable over the cited art under 35 U.S.C. § 103(a).

V. Rejection of Claim 9 under 35 U.S.C. § 103(a)

Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Reddi*, *Shibano*, and *Mockapetris*, and further in view of *Sherman*. Because *Reddi*, *Shibano*, *Mockapetris*, and *Sherman*, either alone or in combination, fail to teach or suggest each of the limitations of claim 9,

Applicants assert that claim 9 is patentable over the cited art. Claim 9 ultimately depends from claim 1. As set forth above with respect to claims 1 and 7, the combination of *Reddi*, *Shibano*, and *Mockapetris* fails to teach or suggest each of the limitations of claim 1. Hence, even if *Sherman* is combined with *Reddi*, *Shibano*, and *Mockapetris* for the disclosure of a filter that includes a high-pass characteristic as suggested by the Examiner, the resulting combination fails to teach or suggest each of the limitations of claim 9. Accordingly, Applicants assert that claim 9 is patentable over the cited art under 35 U.S.C. § 103(a).

VI. Rejection of Claims 15 and 16 under 35 U.S.C. § 103(a)

Claims 15 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Reddi* and *Shibano* in view of U.S. Patent No. 5,345,824 ("*Sherman*"). Applicants assert that claims 15 and 16 are patentable over the cited art because *Reddi*, *Shibano*, and *Sherman*, either alone or in combination, fail to teach or suggest each of the limitations of claims 15 and 16.

Claims 15 and 16 each ultimately depend from claim 1. As set forth above, the combination of *Reddi* and *Shibano* fails to teach or suggest each of the limitations of claim 1. Accordingly, even if *Mockapetris* is combined with *Reddi* and *Shibano* for the disclosure of third and fourth capacitors, the resulting combination suggested by the Examiner fails to teach or suggest every limitation of claims 15 and 16. Thus, Applicants assert that claims 15 and 16 are patentable over the cited art under 35 U.S.C. § 103(a).

VII. Conclusion

Based on the above amendments and these remarks, reconsideration of Claims 1 - 5, 7 - 22, 36 - 40 and 45 - 49 is respectfully requested.

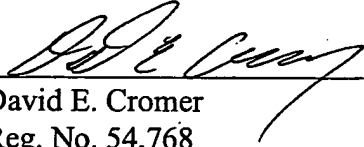
The Examiner's prompt attention to this matter is greatly appreciated. Should further questions remain, the Examiner is invited to contact the undersigned attorney by telephone.

Enclosed is a PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. § 1.136 for extending the time to respond up to and including today, November 4, 2004.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 501826 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

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